REMARKS

Claims 1-4, 6-11, 14-15, 18-20 and 22-24 are pending in the present application.

Claim Amendments

Claim 1 is amended to be directed generally to the embodiment as described at Figure 2 and page 11, line 19 to page 15, line 2 of the specification, as well as at claim 5. Claims 5, 13 and 21 are cancelled. The dependent claims are amended accordingly. No new matter is added by this amendment.

Withdrawal of Finality of Prior Action

Applicants acknowledge with appreciation the withdrawal of the indication of Finality of the prior action.

Withdrawal of Rejection under 35 USC 112 (paragraph one)

Applicants acknowledge with appreciation the withdrawal of the prior rejection under 35 USC 112 (paragraph one).

The Present Invention and Its Advantages

By way of review, the claimed invention is directed to a cleaning sheet, which comprises a liquid retentive sheet and at least one air-laid non-woven fabric provided on at least one side of the liquid retentive sheet. The liquid retentive sheet comprises cellulosic fiber in an amount of from 30 to 100% by weight based on the weight of said liquid retentive sheet, with the liquid retentive sheet and the non-woven fabric being laminated to each other, the non-woven fabric having 30 to 100% by weight of thick thermoplastic fibers having a fiber length of 2 to 15 mm and a fineness of 10 to 150 dtex, 1 to 50% by weight of thin thermoplastic fibers having a fiber length of 2 to 15 mm and a fineness of 0.5 to 5 dtex.

The air-laid non-woven fabric has a number of tips of the thick thermoplastic fibers forming the non-woven fabric exposed on the surface of the cleaning sheet to have the capability of scouring or scraping dirt off of a soiled surface, wherein the number of tips of the thick thermoplastic fibers is 20-4000/cm^2, having intersections of the thick thermoplastic fibers together with intersections of thick thermoplastic fibers and thin thermoplastic fibers, said intersections of the thick fibers and the intersections of the thick and thin fibers being bonded by fusion or with a binder, and wherein the non-woven fabric has a basis weight of from 30 to 200 g/m^2.

The now-claimed invention is neither disclosed nor suggested by the cited prior art.

Rejection of Claims 1, 9-10, 13-15, 18 and 21-23 Under 35 USC 103(a)

Claims 1, 9-10, 13-15, 18 and 21-23 stand rejected under 35 USC 103(a) as obvious over JP 2000-212866 in view of JP 03-279452 or JP 02-112460, further in view of Textile Glossary (newly-cited). This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

Applicants initially note that none of the cited art relied on by the Examiner teaches or provides for a cleaning sheet as instantly claimed and in no way provide any motivation to arrive at the same.

More particularly, none of the cited art teach or provide for a cleaning sheet comprised of a liquid retentive sheet and at least one air-laid non-woven fabric provided on at least one side of the liquid retentive sheet. The liquid retentive sheet comprises 30 to 100% by weight of cellulosic fibers. The non-woven fabric preferably contains a *combination of* (i) *thick thermoplastic fibers* having a fiber length of 2 to 15 mm and a fineness of 10 to 150 dtex, (ii) *thin thermoplastic fibers* having a fiber length of 2 to 15 mm and a fineness of 0.5 to 5 dtex, and (iii) wherein 20 to 4000/cm^2 tips of the *thick fibers* are exposed on the surface of the cleaning sheet.

Further, not only does the claimed nonwoven fabric have intersections of the thick fibers, but also intersections of the thick and thin fibers (see claim 1). The respective intersections of fibers are bonded by fusion or with a binder. This prevents the thick fibers from falling off, while improving scraping properties of the material.

JP '866 teaches a fiber mat comprised of cellulosic fibers and heat-bondable synthetic fibers. The mat may also be bonded or laminated to another mat comprised of synthetic or natural fibers.

The fiber mat of JP '866 may be nonwoven, which may be an air-laid nonwoven fabric, containing heat-fusible bicomponent fibers having specific affinity to cellulose and cellulosic fibers. The nonwoven fabric is used for a wipe for absorbing liquid and a liquid absorber. It is known in the art that conventional heat-fusible fibers do not exhibit high strength of thermal bonding to cellulosic fibers, since synthetic resins have a low affinity to cellulose.

To the contrary, the heat-fusible fiber of the reference is characterized by high strength of thermal bonding to cellulosic fibers. In contrast, JP '866 is characterized by the use of a special heat-fusible bicomponent fiber having high affinity to cellulose.

The reference is silent with respect to removing soil from a solid surface by scouring or scraping by thick fibers. The reference also fails to teach or suggest the use of thick and thin fibers in combination, together with cellulosic

fibers. Indeed, the Examiner acknowledges that the reference fails to teach the presence of "thin" fibers.

While JP '452 and JP '460 are cited to teach the combination of thick and thin fibers in a textile sheet which may be a non-woven sheet, the references are silent with respect to the presence of cellulosic fibers in the sheet as now claimed.

JP '460 is directed to a sheet used as a filter material, bacteria barrier material, liquid-absorbent material, etc. The sheet of JP '452 is the same as for JP '460. The sheets of JP '460 and JP '452 are used for a different purpose than the sheet of JP '866. Accordingly, one of ordinary skill in the art is provided no motivation by the JP '460 and '452 references in relation to JP '866. JP' 866 is directed to an air-laid nonwoven fabric, while JP '460 and JP '452 each teach meltblown nonwoven fabric. No reason exists to employ both thick *and* thin thermoplastic fibers used in the *meltblown* nonwoven fabric as the thermoplastic fiber used for an *air-laid* nonwoven fabric.

In addition, the sizes of the thick and thin fibers disclosed in these two references do not fall within the claimed range.

For example, in Example 1 of JP '460, a melt-blown polypropylene fiber of 1.7 μm (thin fiber) and a polyethylene fiber of 25 μm (thick fiber) are used. These fiber sizes correspond to 0.02 dtex for the melt-blown polypropylene fiber

and 4.5 dtex for the polyethylene fiber, based on the density of 0.9 g/cm^3 for polypropylene and 0.92 g/cm^3 for polyethylene.

In Example 1 of JP '452, a melt blown polypropylene/polyethylene fiber of 2.0 μm (thin fiber) and a polypropylene fiber of 6 deniers (thick fiber) are used. These fiber sizes correspond to about 0.028 dtex for the melt-blown polypropylene/polyethylene fiber and 6.6 dtex for the polypropylene fiber.

By contrast, applicants' claims provide for a thick fiber of 10 to 150 dtex and a thin fiber of 0.5 to 5 dtex. The references thus do not exemplify the use of a thick fiber as claimed, with the exemplified "thick" fibers being from 34-55% or so smaller than required by applicants' claims.

Claim 1 (as was claim 13 previously) now generally corresponds to the embodiment of Figure 2 – i.e., a nonwoven fabric having a first layer having 30-100% by weight of thick thermoplastic fibers (as defined) and 1-50% by weight of thin thermoplastic fibers (as defined), and a second layer comprised of 30 to 100% by weight of cellulosic fibers, with the first layer having a number of tips of the exposed thick fibers in the range of 20 to 4000/cm^2.

The embodiment of claim 1 is neither disclosed nor suggested by the cited prior art. While JP '866 teaches at claim 13 the combination of the nonwoven layer with, for example, a cellulose fiber layer, the reference is otherwise silent regarding the other limitations of the claims.

Further, none of the cited prior art teaches or suggests the use of ***crimped*** thin fibers in a cleaning sheet as claimed (see claim 10). While JP '456 and JP '462 teach the crimping of fibers, the references limit their teachings to the crimping of thick (as opposed to thin) fibers. Applicants have found that the use of crimped thin fibers enhances the bulkiness of the resulting cleaning sheet, and hence, the tactile nature of the cleaning sheet as discussed at page 12, lines 27-28.

Accordingly, since the cited art references do not teach or otherwise provide for each of the limitations recited in the pending claims, it follows that the cited art cannot render obvious the same. Likewise, because the cited art references do not provide any motivation for that would allow one of ordinary skill in the art to arrive at the instant invention as claimed, they cannot support an obviousness rejection of independent claim 1.

The rejection is thus without basis and should be withdrawn.

Rejection of Claims 2, 11, 19 and 20 Under 35 USC 103(a)

Claims 2, 11, 19 and 20 stand rejected under 35 USC 103(a) as obvious over JP 2000-212866 in view of JP 03-279452, JP 02-112460 and Kakiuchi et al. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

The deficiencies of the primary references are discussed at length above. The additionally-cited Kakiuchi et al reference does not cure such deficiencies, and the rejection should be withdrawn.

Rejection of Claims 3-8 Under 35 USC 103(a)

Claims 3-8 stand rejected under 35 USC 103(a) as obvious over JP 2000-212866 in view of JP 03-279452, JP 02-112460 and Kobayashi et al. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

The deficiencies of the primary references are discussed at length above. The additionally-cited Kobayashi et al reference does not cure such deficiencies, and the rejection should be withdrawn.

In view of the above, the application is believed to be in condition for allowance, and an early indication of the same is earnestly solicited.

If any questions remain regarding the above matters, please contact Applicant's representative John W. Bailey (Reg. No. 32,881), at the phone number listed below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

A check in the amount of $120.00 is attached for payment for the requested one month extension of time.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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